

## **A preliminary examination of the effects of changes in motorcycle licensing in Queensland**

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### **Abstract**

Several sets of changes have been made to motorcycle licensing in Queensland since 2007, with the aim of improving the safety of novice riders. These include a requirement that a motorcycle learner licence applicant must have held a provisional or open car licence for 12 months, and imposing a 3 year limit for learner licence renewal. Additionally, a requirement to hold an RE (250 cc limited) class licence for a period of 12 months prior to progressing to an R class licence was introduced for Q-RIDE. This paper presents analyses of licensing transaction data that examine the effects of the licensing changes on the duration that the learner licence was held, factors affecting this duration and the extent to which the demographic characteristics of learner licence holders changed. The likely safety implications of the observed changes are discussed.

### **Keywords**

Motorcycle Licensing, Graduated Licensing, Learner Riders, Novice Motorcyclist

### **Introduction**

Inexperience has been shown to be a major factor in motorcycle crashes worldwide. Whilst the learner stage has consistently been shown to be much safer for car drivers than the subsequent provisional stage, the same is not true for motorcyclists. For example, in New South Wales during 2007, learner and provisional motorcycle licence holders were involved in similar proportions of injury crashes (8.8% and 8.0%) [1]. In contrast, learner car drivers were involved in only 1.1% of all car driver injury crashes compared to 18.2% of provisional car licence holders. In Queensland, newly licensed motorcyclists are found to be at considerable risk with more than 16% of motorcyclists in fatal crashes in 2006 having held a licence less a year, and a further 6% having held a licence for between 1 and 2 years. Only 2% had held a licence longer than 8 years [2]. However, not all of the newly licensed riders were young: while 39% of first year licensed riders in fatal crashes were aged 17–24, 36% were aged 30–49 (where age and licence history was known). These data suggest that current restrictions on learner riders are not producing the same safety benefits as restrictions on learner drivers. It is therefore imperative to improve safety for learner riders.

Each Australian jurisdiction has a graduated licensing system for motorcyclists, with learner, restricted or provisional and full licence stages, but different requirements [3]. This paper examines the effects of changes to motorcycle licensing in Queensland during 2007 and 2008 that aimed to improve the safety of novice riders. First, a brief outline of motorcycle licensing in Queensland will be given, before outlining the details of the changes. The research questions will then be presented.

#### *An outline of motorcycle licensing in Queensland*

In Queensland, there are two classes of motorcycle licence (R and RE) and three types of licence (Learner, Provisional<sup>1</sup>, and Open). These are outlined below [4].

- Learner licence (RE) – Permits the holder to ride a motorbike with an engine capacity less than 250cc (mL). The licence candidate must ride under direction of another rider who holds an open

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<sup>1</sup> A Provisional licence is comparable to a probationary or restricted licence in some other jurisdictions.

licence and who has held that licence for at least one year (supervisor may follow on another motorcycle, car, or other vehicle but cannot be a pillion passenger on the learner's motorcycle).

- Class RE licence – Permits the holder to ride a motorbike or a moped with an engine capacity less than 250cc (mL) with or without a trailer.
- Class R licence – Permits the holder to ride a motorbike of any engine capacity (unrestricted).

In addition, any holder of an Open car licence is allowed to ride a moped. A moped is defined as a light motorbike with an engine capacity less than 50cc that must not exceed 50 km/h.

Before August 2001, all motorbike licence applicants undertook a practical test that was assessed by Queensland Transport Driving Examiners, a process which is commonly referred to as Q-SAFE. They were required to hold a learner licence for at least six months prior to obtaining a class RE licence. In addition, a class R licence was not issued unless the applicant had held a class RE licence for at least 12 months, with an on-road test also required on >250cc capacity machine to obtain an R class licence.

In August 2001, Queensland Transport introduced Q-RIDE, an alternative motorbike licensing method designed to reduce the rate of crash involvement of motorcyclists in Queensland. Q-RIDE was introduced at a time when motorcycle licences, registrations and crashes were increasing. The introduction of Q-RIDE was associated with a large increase in the number of new licences issued (from about 6,000 per year to about 11,000 per year) and changed the pattern of licensing (more R licences and fewer RE licences issued). It was offered as a voluntary scheme to run concurrently with the existing Queensland Transport practical test arrangements for motorbike licence candidates (i.e. Q-SAFE). Q-RIDE also provided an alternative method for holders of a restricted motorbike licence (RE) to obtain an unrestricted licence (R). Q-RIDE involves accredited rider trainers conducting competency-based training and assessment of motorbike licence candidates through approved Q-RIDE Service Providers. Riders are required to achieve a range of competencies before qualifying for a Queensland motorbike licence. Q-RIDE requires licence applicants to demonstrate the knowledge, skills and attitude needed for the safe operation of a motorbike. On successful completion of Q-RIDE, riders are issued a certificate that is presented to the licensing authority as part of process of applying for a licence.

#### *Changes to motorcycle licensing in Queensland*

On 1 July 2007, a requirement was introduced that applicants for learner motorcycle licence must have held a provisional or open car licence for 12 months. This effectively increased the minimum age for the motorcycle learner licence from 16 years 6 months to 18 years from this date. The minimum age for the motorcycle provisional licence was effectively increased from 17 to 18 for riders completing Q-RIDE and from 17 years 6 months to 18 years 6 months for riders obtaining their licence by Q-SAFE. On the same date, a 3 year limit for the motorcycle learner licence was introduced. Prior to this, the learner licence did not expire and so learner riders who did not go on to obtain a motorcycle licence kept their learner licence indefinitely (as long as they renewed it or their car licence).

Another set of changes were introduced on 1 July 2008. Before this, riders who completed Q-RIDE on a motorcycle of greater than 250 cc engine capacity and had held a car licence for at least three years during the last five were eligible to obtain an R class licence without needing to first hold an RE licence. From 1 July 2008, all riders were required to hold an RE class licence for a period of 12 months prior to progressing to an R class licence. This applied regardless of the licensing stream (Q-RIDE or Q-SAFE) or length of time a car licence had been held. Subsequent changes including the introduction of the Learner Approved Motorcycle Scheme (LAMS) in July 2009 can be found at:

[http://www.transport.qld.gov.au/Home/Safety/Road/Motorbike/Motorcycle\\_changes/](http://www.transport.qld.gov.au/Home/Safety/Road/Motorbike/Motorcycle_changes/)

#### *Focus of this paper*

This paper seeks to examine the effects of the changes in motorcycle licensing in Queensland on the uptake of learner, provisional and open motorcycle licences; on progression through the licensing system and on the characteristics of new riders by analysing licensing data. In particular it seeks to measure how

much difference the requirement to have held a car licence for at least 12 months has made to the number of young novice riders.

### Methods

The Data Analysis Unit of the Queensland Department of Transport and Main Roads (TMR) provided an electronic data file containing all motorcycle licensing transactions for all customers who had obtained a motorcycle learner licence from 1 January 2006 to 1 July 2009. The file contained unit record data which were then transformed by the Research Team to include all of the transactions for a particular individual on a single line of the SPSS data file. The variables included:

- De-identified version of the Customer Reference Number (CRN)
- Date of birth
- Gender
- Date of transaction
- Transaction type
- Effective date
- Licence class (R or RE)
- Licence level (Learner, Provisional or Open)
- Indicator of type of Q-Ride certificate (QRR or QRRE)

Transaction type included the following codes:

LACL = add class to driver licence  
 LADD = Add driver licence  
 LGDC = Downgrade driver licence class/es  
 LTDL = Transfer driver licence  
 LTDP = Transfer driver licence (pay)  
 LTLC = Transfer driver licence class  
 LUPL = Upgrade driver licence type  
 LUPP = Upgrade driver licence type (pay)

Given the changes in the motorcycle licensing system, the licensing data were analysed separately for three time periods:

- Period A: 1 January 2006 to 30 June 2007
- Period B: 1 July 2007 to 30 June 2008
- Period C: 1 July 2008 to 30 June 2009.

In the analyses of duration for which a learner licence was held, data for riders who obtained their learner licence during 1 January 2009 to 1 July 2009 were omitted because these riders may not have had time to progress from a learner licence to a P or O licence and so may have skewed comparisons of duration for which the learner licence was held.

Examination of the data led to several groups being identified which are described below:

- Group 1 – Riders who obtained their learner licence during the data period but did not progress to obtain their provisional or open licence within the data period
- Group 2 – Riders whose only transactions in the data set related to obtaining a provisional or open licence
- Group 2 (a) – Subset of Group 2 who previously held an interstate or overseas motorcycle licence (indicated by transaction codes LTDP, LTDC and LTDL)
- Group 2 (b) – Subset of Group 2 who held Queensland learner licence prior to the start of the data set (indicated by transaction codes LUPL, LUPP)
- Group 3 – Riders who obtained their learner licence and then progressed to obtaining a provisional or open licence within the data period

The time limitations of the dataset and the changes to motorcycle licensing that occurred during the period combined to require careful analysis and interpretation of the data. For example, members of Group 1 cannot be assumed to have “dropped out” of the motorcycle licensing system – they may have obtained their P or O after the end of the data period.

Given that some of the licensing changes differentially affected Q-RIDE and Q-SAFE, it was important to classify riders according to which licensing stream they had taken. The data included a Q-RIDE flag, which was used to identify riders who had obtained their provisional or open licence by this stream. There was no code to indicate riders who had obtained their licence by Q-SAFE. It was initially assumed that riders where there was no Q-RIDE flag had gained their licence by Q-SAFE. However, initial analyses of the licensing data found that 94 “unflagged” riders (0.4%) had held their learner licence for less than 180 days. Given that there was and remains a six-month minimum period of holding the learner licence before a licence can be obtained by Q-SAFE, this cast doubt on the accuracy of the data. Extensive discussions with TMR led to the conclusion that it was likely that clerical errors had resulted in the flag failing to be entered for some riders where it should have been entered. Therefore, the “unflagged” riders with a learner licence period of less than 180 days were almost certain to have completed Q-RIDE, rather than Q-SAFE, and thus were misclassified in the data. While it would be defensible to re-classify these riders as obtaining their licence by Q-RIDE, the conservative approach of placing them in an “uncertain” licensing stream group was taken for the analyses reported here. In Period A, 10% of riders who were flagged as completing Q-RIDE had held their learner licence for 180 days or more (4.5% in Period B and only 0.1% in Period C because of not including those in second six months of Period B in duration calculations as described earlier). Given that there was no maximum period of validity of the learner licence for Q-RIDE, these riders were kept in the Q-RIDE group.

#### *Analysis methods*

Most of the data examined for this paper consisted of simple counts of numbers of licences issued. The counts were generally large numbers where statistical comparisons may have found significant differences where no practically meaningful differences existed. For that reason, the approach taken was to present descriptive data in terms of counts and percentages. The duration for which the learner licence was held, however, provided continuous data and was likely to be influenced by a range of factors such as licence stream (Q-RIDE or Q-SAFE), legislation period, gender and age. After presenting mean and median values for learner licence duration, multiple linear regression was used to determine which of these factors could be shown to affect licence duration in a statistically significant manner.

#### **Results**

This section begins with a summary of the number of learner licences obtained in each of the legislative periods and the characteristics of these riders and any changes observed. Analyses of the duration that the learner licence was held and factors affecting this are then presented.

#### *Numbers of learner licences issued*

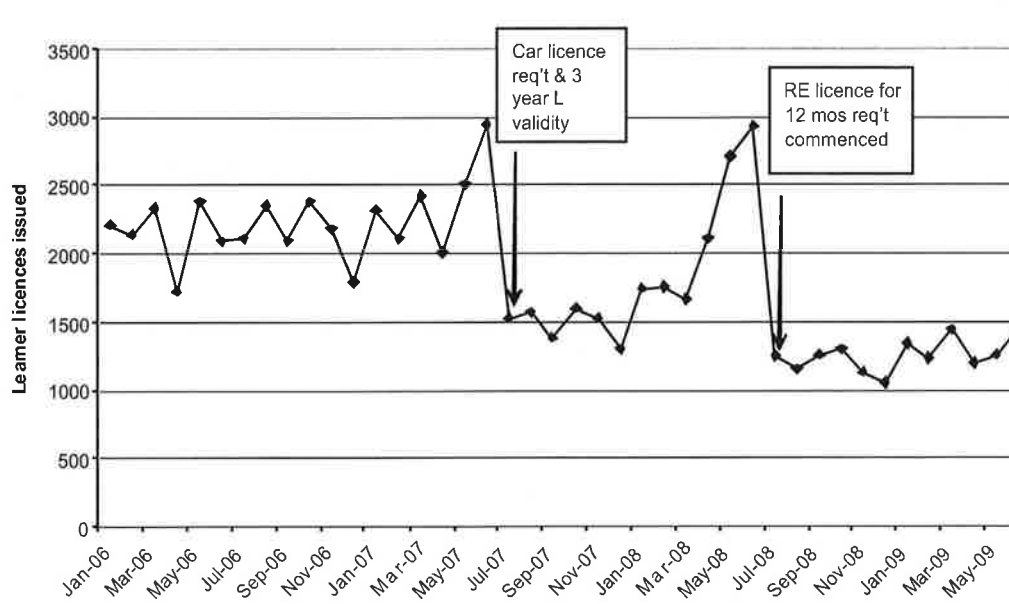
A total of 78,704 motorcycle learner licences were issued in Queensland from 1 January 2006 to 31 December 2009. Of these, 74,948 were issued during Periods A, B, and C (as shown in Table 1) which form the basis for further analysis. The *average annual* number of learner licences issued decreased across the three legislation periods: 26,653 in Period A; 20,252 in Period B; and 14,717 in Period C.

The monthly breakdown of the number of learner licences issued shown in Figure 1 highlights the decrease immediately following the changes in July 2007, then again following the changes in July 2008. A general decreasing trend in the number of learner licences issued is evident with the exception of a spike in the data during mid-2008 prior to the introduction of licence changes that took effect in July 2008.

**Table 1:** Numbers of riders according to types of motorcycle licensing transactions during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

| Characteristics   | Period A<br>(18 months) | Period B<br>(12 months) | Period C<br>(12 months) | Total              |
|---|-------------------------|-------------------------|-------------------------|--------------------|
| <b>Obtained L and progressed to P or O within same Period</b> | 11,042<br>(100.0%)      | 8,208<br>(100.0%)       | 4,305<br>(100.0%)       | 23,555<br>(100%)   |
| Q-RIDE  | 10,827<br>(98.1%)       | 8,162<br>(99.4%)        | 4,230<br>(98.3%)        | 23,219<br>(98.6%)  |
| Q-SAFE  | 159<br>(1.4%)           | 21<br>(0.3%)            | 38<br>(1.9%)            | 242<br>(1%)        |
| Uncertain   | 56<br>(0.5%)            | 25<br>(0.3%)            | 36<br>(0.8%)            | 94<br>(0.4%)       |
| <b>Did not progress to P or O by 30 June 2009</b>             | 24,352<br>(60.9%)       | 10,192<br>(50.3%)       | 10,412<br>(70.7%)       | 44,794<br>(59.8%)  |
| <b>All learner licences issued*</b>                           | 39,979<br>(100.0%)      | 20,252<br>(100.0%)      | 14,717<br>(100.0%)      | 74,948<br>(100.0%) |

\*Totals also includes those who did not obtain learner licence within Queensland (approx. 1300) and those who obtained L in one Period and then progressed to P or O in a later Period but before 30 June 2009 (approx. 5300)

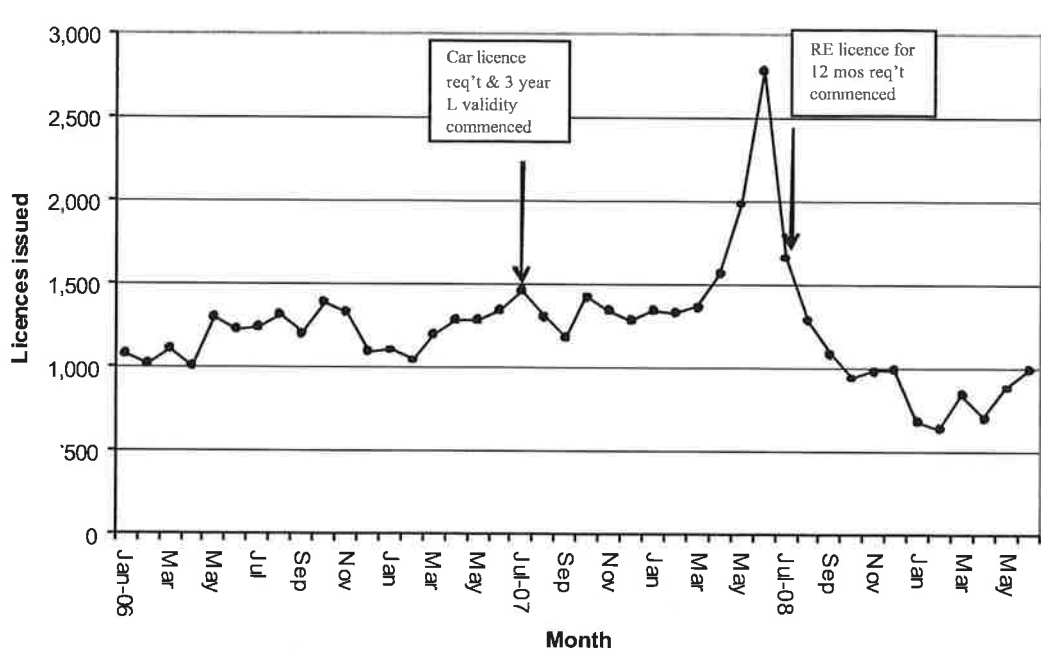
**Figure 1:** Number of learner motorcycle licences issued each month from January 2006 to June 2009.

#### *Numbers of provisional or open licences issued*

The *average annual* numbers of provisional or open licences issued to riders who had obtained their learner licences during the same period for Periods A, B and C were 7,361; 8,208 and 4,305 respectively. These figures suggest that the changes introduced on 1 July 2007 had little effect on uptake of motorcycle licences but the changes introduced on 1 July 2008 led to a marked decrease in the number of licences issued. This perhaps reflects public reaction to prior notice of the introduction of the change in July 2008 regarding the abolition of the unrestricted capacity incentive that was part of Q-RIDE, whereby many people rushed to enrol in Q-RIDE at the end of Period B before the changes took affect. Hence, licensing figures may be inflated in Period B and deflated in Period C due to this 'migration'. This can also be seen

in Figure 1 in regard to the issue of learner licences which can be obtained immediately prior to enrolling in Q-RIDE (i.e. no minimum learner period).

The monthly licence data in Figure 2 reveals a general increasing trend in the number of Provisional and Open licences issued per month during Period A. Notably, fewer licences were issued at the start of Period A than at any other time throughout the entire study period. During Period B there were a reasonably consistent number of licences issued each month until a rapid increase in April 2008, peaking in June 2008. A comparatively high number of licences were also issued in July 2008 at the start of Period C. A general decreasing trend is evident from July 2008 to November 2008 during Period C.



**Figure 2:** Number of provisional and open motorcycle licences issued each month from January 2006 to June 2009. Data from TMR, not licensing transaction dataset.

Across all three legislation periods, more than 98% of riders selected the Q-RIDE licence stream (see Table 1.). This preference appeared to be unaffected by the licensing changes.

In addition to those riders who obtained a learner licence and then progressed to obtain a provisional or open licence during 2006 to 2009, there were 1,349 riders who were issued with a provisional or open licence who had obtained a Queensland learner licence prior 2006 (65.5%) or had previously held an interstate or overseas motorcycle licence (34.7%).

Overall, 40.4% of those who obtained a motorcycle learner licence between 1 January 2006 and 30 June 2009 **did not** progress to obtain a provisional or open motorcycle licence by the end of December 2009. Some of these riders may have obtained a learner licence towards the end of Period C and so had little time to obtain a licence, but this accounts for a relatively small number. Among those who obtained a learner licence in Periods A and B, 68.8% and 55.39% did not go on to obtain a provisional or open licence.

#### *Licensing stream and licence class*

As mentioned earlier, a Queensland motorcycle licence can be obtained through either the Q-RIDE or Q-SAFE streams. The licensing stream is not nominated at the time of obtaining a learner licence, so it is only recorded for those learners who go on to obtain a licence. Similarly, R or RE licence class is known only for those who obtained a licence. Table 1 shows that more than 98.6% of motorcycle licences were obtained by the Q-RIDE stream and that this high proportion did not change as the legislation was

changed. Table 2 shows that the vast majority of licences issued during both Period A and Period B were R class (74% and 84.8% respectively). However, during Period C it can be seen that the most licences issued were RE class (98%) displaying a reversal from the previous periods. This is consistent with the change introduced in July 2008 that specified that all riders (regardless of licensing stream) were required to hold an RE class licence before graduating to an R class.

**Table 2:** Gender of riders during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009). Excludes "Uncertain" licensing stream and those who did not obtain learner licence in Queensland.

|  | Male    | Female  | Total    |
|--|---------|---------|----------|
| <b>PERIOD A (18 months)</b>                  |         |         |          |
| <b>Progressed to obtain P or O in Period</b> | 9,286   | 1,700   | 10,986   |
|  | (84.5%) | (15.5%) | (100.0%) |
| RE   | 2,118   | 737     | 2,855    |
|  | (74.2%) | (25.8%) | (26.0%)  |
| R  | 7,168   | 963     | 8,131    |
|  | (88.2%) | (11.8%) | (74.0%)  |
| <b>Did not progress to obtain licence</b>    | 18,323  | 6,029   | 24,352   |
|  | (75.2%) | (24.8%) | (100.0%) |
| <b>All learner licences issued</b>           | 31,373  | 8,606   | 39,979   |
|  | (78.5%) | (21.5%) | (100.0%) |
| <b>PERIOD B (12 months)</b>                  |         |         |          |
| <b>Progressed to obtain P or O in Period</b> | 6,937   | 1,246   | 8,183    |
|  | (84.8%) | (15.2%) | (100.0%) |
| RE   | 816     | 431     | 1,247    |
|  | (65.4%) | (34.6%) | (15.2%)  |
| R  | 6,121   | 815     | 6,936    |
|  | (88.2%) | (11.8%) | (84.8%)  |
| <b>Did not progress to obtain licence</b>    | 7,025   | 3,167   | 10,192   |
|  | (68.9%) | (31.1%) | (100.0%) |
| <b>All learner licences issued</b>           | 15,301  | 4,951   | 20,252   |
|  | (75.5%) | (24.5%) | (100.0%) |
| <b>PERIOD C (12 months)</b>                  |         |         |          |
| <b>Progressed to obtain P or O in Period</b> | 3,475   | 793     | 4,268    |
|  | (81.5%) | (18.5%) | (100.0%) |
| RE   | 3,396   | 789     | 4,185    |
|  | (81.1%) | (18.9%) | (98.1%)  |
| R  | 79      | 4       | 83       |
|  | (95.7%) | (4.8%)  | (1.9%)   |
| <b>Did not progress to obtain licence</b>    | 7,468   | 2,944   | 10,412   |
|  | (71.7%) | (28.3%) | (100.0%) |
| <b>All learner licences issued</b>           | 10,979  | 3,738   | 14,717   |
|  | (74.6%) | (23.4%) | (100.0%) |

*Gender of riders*

Table 2 shows that in each Period, just under a quarter of learner licences were issued to females and that female learners were less likely to progress to obtain a provisional or open licence. In addition, females made up a larger proportion of those obtaining RE licences than R licences in each Period. There is no evidence that the changes in the legislation had a differential effect on females.

*Age of riders*

Table 3 shows that the mean age of riders who obtained their licence by Q-RIDE was higher than for Q-SAFE in Period A, although this was reversed in Period B. The age of the riders for whom the licensing stream was uncertain was similar to that of Q-RIDE, lending further support to the view that these are misclassified Q-RIDE participants. The data suggest that riders who obtained a learner licence and did not progress to obtain a licence were younger on average than those who progressed (e.g. 24.3 years versus 33.1 years in Period A). The data show that mean and median age was fairly consistent across time periods for those who progressed to licensing.

**Table 3:** Age at time of obtaining learner licence during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

|  | Q-RIDE | Q-SAFE | Uncertain | All Riders |
|--|--------|--------|-----------|------------|
| <b>PERIOD A (18 months)</b>                  |        |        |           |            |
| <b>Progressed to obtain P or O in Period</b> |        |        |           |            |
| Mean   | 33.12  | 25.58  | 33.96     | 33.01      |
| Median                                       | 32     | 20     | 34        | 32         |
| Range  | 16-76  | 16-63  | 17-59     | 16-76      |
| <b>Did not progress to obtain licence</b>    |        |        |           |            |
| Mean   | -      | -      | -         | 24.3       |
| Median                                       | -      | -      | -         | 21         |
| Range  | -      | -      | -         | 16-78      |
| <b>PERIOD B (12 months)</b>                  |        |        |           |            |
| <b>Progressed to obtain P or O in Period</b> |        |        |           |            |
| Mean   | 34.51  | 40.62  | 36.48     | 34.53      |
| Median                                       | 34     | 41     | 39        | 34         |
| Range  | 17-75  | 19-74  | 21-48     | 17-75      |
| <b>Did not progress to obtain licence</b>    |        |        |           |            |
| Mean   | -      | -      | -         | 30.62      |
| Median                                       | -      | -      | -         | 28         |
| Range  | -      | -      | -         | 16-75      |
| <b>PERIOD C (12 months)</b>                  |        |        |           |            |
| <b>Progressed to obtain P or O in Period</b> |        |        |           |            |
| Mean   | 34.73  | -*     | 32.31     | 34.73      |
| Median                                       | 34     | -*     | 31        | 34         |
| Range  | 18-71  | -*     | 22-44     | 18-71      |
| <b>Did not progress to obtain licence</b>    |        |        |           |            |
| Mean   | -      | -      | -         | 30.08      |
| Median                                       | -      | -      | -         | 27         |
| Range  | -      | -      | -         | 17-81      |

\* only one rider in this group



Table 4 below addresses a specific issue of interest – the effect of the increased effective minimum licensing age on the number of younger riders obtaining a learner licence which came into force on 1 July 2007 (the beginning of Period B). The change in legislation dictating that a motorcycle licence applicant was required to have held a car licence for 12 months appeared to lead to an annual reduction in the number of learner licences issued to riders aged 17 years from 261 to zero (2.4% of learner licences) and for riders aged 17 years to under 18 years from 208 to zero (1.9% of learner licences). With this change in legislation it might be expected that riders would become licensed at a later age in subsequent time periods. Indeed, Table 4 shows that for those aged 18-20 years there was an increase to 12.9% of all of those that progressed to licensing through Q-Ride in Period C compared to 6.5% in Period B. The number of Q-SAFE licence holders is negligible in each period for this age group.

Another interesting feature of Table 4 is that the lower mean age of riders who obtained a learner licence but did not progress to obtain a provisional or open licence compared to those who did progress that was identified in Table 3, appears to have a large contribution from riders aged under 17.

**Table 4:** Age distributions of riders obtaining learner licences during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

|                                       | Under 17         | 17 to under 18  | 18 to 20         | Over 20           |
|---------------------------------------|------------------|-----------------|------------------|-------------------|
| <b>PERIOD A (18 months)</b>           |                  |                 |                  |                   |
| <b>Progressed to obtain P/O</b>       |                  |                 |                  |                   |
| Q-RIDE                                | 261<br>(2.4%)    | 208<br>(1.9%)   | 891<br>(8.2%)    | 9467<br>(87.5%)   |
| Q-SAFE                                | 65<br>(40.9%)    | 5<br>(3.1%)     | 11<br>(6.9%)     | 78<br>(49.1%)     |
| <b>Did not progress to obtain P/O</b> | 6,565<br>(27.0%) | 2,177<br>(8.9%) | 3,386<br>(13.9%) | 12,223<br>(50.2%) |
| <b>PERIOD B (12 months)</b>           |                  |                 |                  |                   |
| <b>Progressed to obtain P/O</b>       |                  |                 |                  |                   |
| Q-RIDE                                | 0<br>(0.0%)      | 1<br>(0.0%)     | 532<br>(6.5%)    | 7,629<br>(93.5%)  |
| Q-SAFE                                | 0<br>(0.0%)      | 0<br>(0.0%)     | 1<br>(4.8%)      | 20<br>(95.2%)     |
| <b>Did not progress to obtain P/O</b> | 9<br>(0.1%)      | 9<br>(0.1%)     | 1,400<br>(13.7%) | 8,774<br>(86.1%)  |
| <b>PERIOD C (12 months)</b>           |                  |                 |                  |                   |
| <b>Progressed to obtain P/O</b>       |                  |                 |                  |                   |
| Q-RIDE                                | 0.0%             | 0.0%            | 527<br>(12.9%)   | 3703<br>(87.9%)   |
| Q-SAFE                                | 0.0%             | 0.00%           | 1<br>(2.6%)      | 37<br>(97.4%)     |
| <b>Did not progress to obtain P/O</b> | 0<br>(0.0%)      | 6<br>(0.1%)     | 1,838<br>(17.7%) | 8,567<br>(82.3%)  |

#### *Duration learner licence held*

While none of the motorcycle licensing changes directly affected the duration that the learner licence was required to be held (no minimum for Q-RIDE and six months for Q-SAFE remaining unchanged), an

analysis was undertaken to gain more understanding about how long the learner licence was held as a step towards being able to measure learner rider exposure and crash risk.

The distribution of days that the learner licence was held was found to be highly skewed, particularly for Q-RIDE (where no minimum learner period is imposed), and therefore median values are discussed below. It should also be noted that the upper limit on the range of days that the learner licence can be held is constrained by the length of the period (1.5 years in Period A, 1 year in both Periods B and C).

During each of the Periods, the median number of days the learner licence was held was 26 or 27 days for Q-RIDE (see Table 5). The median duration for Q-SAFE riders was similar in Period A and Period B (217 and 208 days, respectively). There were no Q-SAFE riders in Period C, so the median duration could not be calculated. Only 10.0% of those in the Q-RIDE stream held their learner licence longer than 180 days (the minimum for Q-SAFE) in Period A and this dropped to 4.5% in Period B and 0.1% in Period C. Part of the reason for the reduction in the percentage of Q-RIDE riders holding their learner licence longer than 180 days may relate to the reduction in the representation of the youngest riders. In Period A, riders could obtain their learner licence at 16 years and 6 months but were unable to obtain a licence until aged 17, even under Q-RIDE. Table 6 shows that the duration of holding the learner licence was longer for younger Q-RIDE riders during Period A, a group which disappeared under Periods B and C.

**Table 5:** Duration in days that learner licence was held by riders who obtained both their learner licence and provisional or open licences during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

|                             | Q-RIDE | Q-SAFE  | Uncertain | Total |
|-----------------------------|--------|---------|-----------|-------|
| <b>PERIOD A (18 months)</b> |        |         |           |       |
| Mean                        | 61.08  | 250.1   | 45.5      | 63.72 |
| Median                      | 26     | 217     | 26.5      | 26    |
| Range                       | 1-520  | 181-514 | 1-167     | 1-520 |
| % ≥180 days                 | 10.0%  | 100.0%  | 0.0%      | 11.2% |
| <b>PERIOD B (12 months)</b> |        |         |           |       |
| Mean                        | 47.31  | 219.81  | 45.32     | 47.75 |
| Median                      | 27     | 208     | 20        | 27    |
| Range                       | 1-356  | 185-307 | 1-179     | 1-356 |
| % ≥180 days                 | 4.5%   | 100.0%  | 0.0%      | 4.7%  |
| <b>PERIOD C (12 months)</b> |        |         |           |       |
| Mean                        | 36.27  | -       | 23.15     | 36.25 |
| Median                      | 27     | -       | 15        | 27    |
| Range                       | 1-391  | -       | 1-72      | 1-391 |
| % ≥180 days                 | 0.1%   | 100.0%  | 0.0%      | 0.1%  |

**Table 6:** Duration in days that learner licence was held by riders of differing age groups who obtained both their learner permit and provisional or open licences during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

|                             | Under 17 | 17 to under 18 | 18 to 20 | Over 20 |
|-----------------------------|----------|----------------|----------|---------|
| <b>PERIOD A (18 months)</b> |          |                |          |         |
| <b>Q-RIDE</b>               |          |                |          |         |
| Mean                        | 224.83   | 101.57         | 80.28    | 53.87   |
| Median                      | 196      | 57             | 40       | 23      |
| Range                       | 11-497   | 1-468          | 1-475    | 1-520   |
| % ≥180 days                 | 77.8%    | 19.7%          | 15.0%    | 7.4%    |
| <b>Q-SAFE</b>               |          |                |          |         |
| Mean                        | 228.52   | 240.8          | 292.27   | 262.73  |
| Median                      | 197      | 182            | 267      | 251     |
| Range                       | 181-514  | 181-421        | 199-487  | 181-421 |
| % ≥180 days                 | 100%     | 100%           | 100%     | 100%    |
| <b>PERIOD B (12 months)</b> |          |                |          |         |
| <b>Q-RIDE</b>               |          |                |          |         |
| Mean                        | -        | -              | 62.24    | 46.28   |
| Median                      | -        | -              | 37       | 26      |
| Range                       | -        | -              | 1-317    | 1-356   |
| % ≥180 days                 | -        | -              | 7.5%     | 4.2%    |
| <b>Q-SAFE</b>               |          |                |          |         |
| Mean                        | -        | -              | -        | 220.3   |
| Median                      | -        | -              | -        | 205     |
| Range                       | -        | -              | -        | 185-307 |
| % ≥180 days                 | -        | -              | -        | 100%    |
| <b>PERIOD C (12 months)</b> |          |                |          |         |
| <b>Q-RIDE</b>               |          |                |          |         |
| Mean                        | -        | -              | 42.52    | 35.54   |
| Median                      | -        | -              | 31       | 26      |
| Range                       | -        | -              | 1-166    | 1-391   |
| % ≥180 days                 | -        | -              | 0%       | 0.1%    |
| <b>Q-SAFE</b>               |          |                |          |         |
| Mean                        | -        | -              | -        | -       |
| Median                      | -        | -              | -        | -       |
| Range                       | -        | -              | -        | -       |
| % ≥180 days                 | -        | -              | -        | -       |

Table 7 below shows that the duration for which females held learner licence was generally longer than for males. This was particularly the case for the Q-RIDE licensing stream, where the mean duration was almost double for females than males (e.g. 49 days versus 22 days in Period A). This pattern appeared to be unchanged across the legislative periods.

**Table 7:** Duration in days that learner licence was held by female and male riders who obtained both their learner licence and provisional or open licences during Periods A (1 January 2006 to 30 June 2007), B (1 July 2007 to 30 June 2008) and C (1 July 2008 to 30 June 2009).

|                             | Female  |        |             | Male    |        |           |
|-----------------------------|---------|--------|-------------|---------|--------|-----------|
|                             | Q-SAFE  | Q-RIDE | All females | Q-SAFE  | Q-RIDE | All males |
| <b>PERIOD A (18 months)</b> |         |        |             |         |        |           |
| Mean                        | 256.31  | 80.44  | 83.13       | 248.89  | 57.54  | 60.28     |
| Median                      | 225.5   | 49     | 49          | 215     | 22     | 23        |
| Range                       | 182-421 | 1-498  | 1-498       | 181-514 | 1-520  | 1-520     |
| % ≥180 days                 | 100%    | 12.2%  | 13.6%       | 100%    | 9.6%   | 10.9%     |
| <b>PERIOD B (12 months)</b> |         |        |             |         |        |           |
| Mean                        | 212.6   | 66.50  | 67.08       | 222.06  | 43.87  | 44.28     |
| Median                      | 196     | 46     | 46          | 208.5   | 24     | 24        |
| Range                       | 188-273 | 1-346  | 1-346       | 185-307 | 1-356  | 1-356     |
| % ≥180 days                 | 100%    | 6.5%   | 6.9%        | 100%    | 4.1%   | 4.3%      |
| <b>PERIOD C (12 months)</b> |         |        |             |         |        |           |
| Mean                        | -       | 45.27  | 45.27       | -       | 34.31  | 34.42     |
| Median                      | -       | 39     | 39          | -       | 25     | 25        |
| Range                       | -       | 1-165  | 1-165       | -       | 1-391  | 1-391     |
| % ≥180 days                 | -       | 0%     | 0%          | -       | 0.1%   | 0.1%      |

*Multiple linear regression*

Multiple regression of the key predictor variables relating to the duration of learner licence period showed that being male, obtaining a licence through Q-Ride, being older, and the progressive introduction of legislative changes all significantly predicted a decrease in the time a learner licence was held (as shown in Table 8). However, caution must be exercised in interpreting the statistically significant nature of these results due to the large sample size. In total, the model incorporating all these factors only accounted for 8.9% of the overall variance in the duration of holding a learner licence, therefore it has very limited predictive validity.

**Table 8.** Summary of Multiple Regression Analysis for duration of learner licence (n=23,554).

|                    | B               | SE(B)  | β     |
|--------------------|-----------------|--------|-------|
| Constant           | 538.912         | 10.809 |       |
| Licence stream     | <b>-172.431</b> | 5.223  | -.217 |
| Legislation period | <b>-11.803</b>  | .758   | -.102 |
| Gender             | <b>-23.190</b>  | 1.329  | -.114 |
| Age                | <b>-41.723</b>  | 1.597  | -.172 |

The dependent variable is the duration of learner licence. The model  $r^2$  is 0.089

Licence stream was coded: Q-SAFE=1; Q-RIDE=2

Legislation period was coded: A=1; B=2; C=3

Gender was coded: Female=1; Male=2

Age was coded: ≤20=1; >20=2

Significant regression coefficients are indicated in **bold**.

**Discussion**

The data examined in this study provided a rare opportunity to examine how motorcycle licensing systems can influence the uptake of riding. This is an important issue due to the potential ramifications for overall exposure and potential crash reduction for motorcyclists (i.e. less riders may potentially result in less crashes). Specifically, the legislative changes in Queensland during 2007 and 2008 had particular implications for: 1) young riders, as the new requirements specified that a car licence must be held for 12

months prior to motorcycle licensing, and; 2) inexperienced riders of larger capacity machines (as reflected in the change from the previous standard of immediate R class licensing for some riders).

The findings with regard to the average annual number of learner licences issued in each time period showed a decrease with each respective period following each legislative change. This suggests that the initiatives negatively influenced the amount of motorcyclists wanting to commence licensed riding over time. However, when the data was examined in regard to the average annual amount of licences issued in each period, a minimal *increase* can be seen from the first to second time period; however a dramatic *decrease* can be seen from the second to the third time period (i.e. following the abolition of R class licensing for those who had held a car licence for at least three years). This reflects the immediate impact of the legislation introduced in July 2008. It is also noted that many people rushed to obtain their motorcycle licence prior to this change. The impact of the change is further evident when examining the amount of R class licences issued before and after the legislative change in July 2008. Prior to the change an overwhelming proportion of the licences issued were R class. However, following the change the vast majority of licences issued were RE class (limited to engine capacity of less than 250cc). In essence this means that a far lower percentage of inexperienced riders were licensed to ride high capacity machines as a result of the change. Whilst there is little evidence that crash involvement increases as a direct function of engine size [5], there is some evidence that high power-to-weight ratios are associated with increased crash risk [6]. Thus, the requirement to first hold an RE licence has the potential to bring about crash reductions (although a Norwegian review concluded that there are no safety benefits of combining power restrictions with age limitations [7]). An examination of crash data over time is required to assess this outcome.

The data also showed some important aspects of the motorcycle licensing population in Queensland. Firstly, the vast majority of licences were (and still are) issued through the Q-RIDE licensing stream. Secondly, Prior to any legislative changes (Period A) the data suggest that Q-SAFE consisted of a younger riding population as evidence by lower median age compared to Q-RIDE. This is consistent with findings from previous evaluations comparing Q-RIDE and Q-SAFE [8,9]. As such, the legislative change in July 2007 had an immediate effect on the number of learner riders that progressed to licensing through the Q-SAFE stream and changed the age profile of Q-SAFE applicants (although the numbers are minimal). The shift in the proportion of riders aged 18-20 seen in Q-RIDE from Period B to Period C perhaps reflects the lag time associated with young rider licensing as a result of the change in July 2007. That is, instead of obtaining a licence at 17 years of age, riders now wait until they are 18. As age has been shown to be a factor in crash involvement this has potential to reduce overall motorcycle crashes, however the numbers are minimal. It appears that the legislation may not have deterred young riders from obtaining a licence, they merely wait longer. More data is required over a longer time period to ascertain the true effects in terms of exposure reduction.

The proportion of those who progressed through from learner licence to licensing compared to those who did not was higher for males compared to females. This may indicate that more women commence riding (usually training) and subsequently decide not to proceed to licensing. The findings also indicate that females generally held a learner licence longer than males, however accounted for a far lower proportion of riders.

The duration that a motorcycle learner licence is held in Queensland for all riders that progress to licensing is an important finding from the research. The findings suggest that, unlike some other Australian states (e.g. NSW and VIC) where a learner licence is required to be held for a minimum of three months, riders that progress to licensing in Queensland do not hold their learner licence for an extended period. The median duration a learner licence was held for was merely 27 days. Whilst Q-SAFE has a mandatory minimum learner period of 180 days, licensing through Q-RIDE has no minimum learner period as a prerequisite. Generally the learner licence is only held for the amount of time it takes for riders to progress through the competency-based training and assessment, which can be as little as one day. As can be seen in the findings, most applicants choose Q-RIDE. This has potential implications for the subsequent safety of riders in that they do not practise skills and manoeuvres whilst holding a learner licence beyond what is required by the course. The median duration of holding a learner licence was generally not affected by the legislative changes. Overall, the minimal duration found for holding a motorcycle learner licence in Queensland before licensing means that the population of newly licensed riders are essentially 'learners' with very little practical riding experience.

### Limitations

The differences between the learner licence issue data and the licence issue data for each period may unfortunately be an artefact of the manner in which the data needed to be operationalised for analysis. That is, the licensing data only includes those that progressed from L to P or O during the same Period (A, B, or C) and not those that may have obtained an L in one period but obtained their P or O in the next period. This resulted in 64% of the sample not being included in the licensing analyses. The analyses were conducted in this manner to avoid potential contamination between each change and this merely reflects the practical constraints associated with this study. Additionally, some riders were classed as 'uncertain' in terms of licensing stream, which restricted some analyses.

### Conclusions

Licensing systems have the power to affect an array of factors associated with motorcycle rider safety. This study has provided valuable insight into the characteristics of learner motorcyclists in Queensland and the impact of legislative changes on the duration of the learner motorcycle licences and the uptake of licensed riding with respect to the number of licences issued as a function of the changes. A reduction in the number of new licence applicants obtaining an unrestricted capacity licence and an overall decrease in exposure has the potential to reduce crashes. The most important outcome from any road safety research is the effect on crash involvement; however, as crash data collation takes time, it is too soon to be able to determine these outcomes.

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